

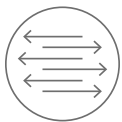


# INTELLIGENT TRAFFIC STEERING IN MOBILE NETWORKS

NETWORK OPTIMIZATION WITH TRAFFIC CONTROL

Subscriber traffic is expanding rapidly, driven by the proliferation of connected devices and increasing bandwidth usage per subscriber. This trend is fueling the demand for new digital content and applications, opening up great opportunities for new service introduction (video calling, high-definition content streaming, etc.), evolving into 5G service offerings, with a wide range of use cases for the scalable hyper-connected Internet of Things (IoT) world.

Operators are constantly exploring ways to enhance network resource utilization by steering traffic flows to the value added services in a way that is transparent to the end user. Intelligently steering traffic can enable operators to offer personalized services to drive new revenue streams and improve operational efficiency for a significant cost savings.



## CHALLENGES WITH CONVENTIONAL TRAFFIC STEERING

Traditionally, legacy products route traffic to all value-added-services (VAS) and data optimization platforms, regardless of the subscriber profile or context type, causing devices to inspect all traffic. This method of routing traffic is neither subscriber aware nor context aware, resulting in non-optimized traffic flows and immense duplication of data processing even for pass-through traffic, demanding dramatic scale-up of the VAS infrastructure.

Operators are challenged with the inability to offer personalized “follow-the-user” type of services and hence, the need for intelligent policy based, subscriber and context aware traffic steering.

## CHALLENGE

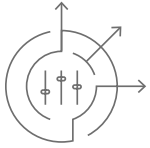
With the mobile data landscape evolving continuously, service providers are faced with challenges presented with explosion in mobile data traffic along with the increasing subscriber demand for continued connectivity. Faster time to market of new revenue-generating services, along with efficient VAS resource utilization, is key to staying competitive and maintaining operational efficiencies.

## SOLUTION

A10 Thunder appliances enable intelligent traffic management that is subscriber and context aware for holistic application delivery and improved subscriber experiences. Gain operational efficiencies and drive business growth through techniques such as Transparent Caching, Media optimization based on Radio Access Type (RAT), and much more.

## BENEFITS

- Faster time to market for new revenue generating services
- Efficient network and VAS utilization
- Control and monetize mobile traffic growth



## A10 NETWORKS TRAFFIC STEERING SOLUTIONS

Thunder ADC appliances support full proxy and context aware features enabling centralized layer 4-7 intelligent traffic management through traffic steering. Networks must go beyond traditional layer 3-4 policy based routing and apply subscriber intelligence in order to optimize the VAS platform services such as media optimization, parental control etc.

Thunder ADC not only allows user requests to be steered to the value added services, as needed, but also can direct traffic to service provider content sources (i.e., web portal, commerce site) or over-the-top content from third parties, based on static policies and highly granular metrics, such as data type, subscriber profile, server availability and requested service.

A10 Thunder supports two modes for intelligent traffic steering in Mobile Networks:

- 1) Multi-Steering with static policies
- 2) Per-subscriber dynamic control of services with dynamic traffic steering

### 1. MULTI-STEERING WITH STATIC POLICIES

Thunder ADC device can be configured with different static policies to make steering decisions. For example, the ADC can be configured to classify traffic based on L3 information (e.g. ACL), L7 information (e.g. URL) and content type to steer the traffic to the VAS in the policy.

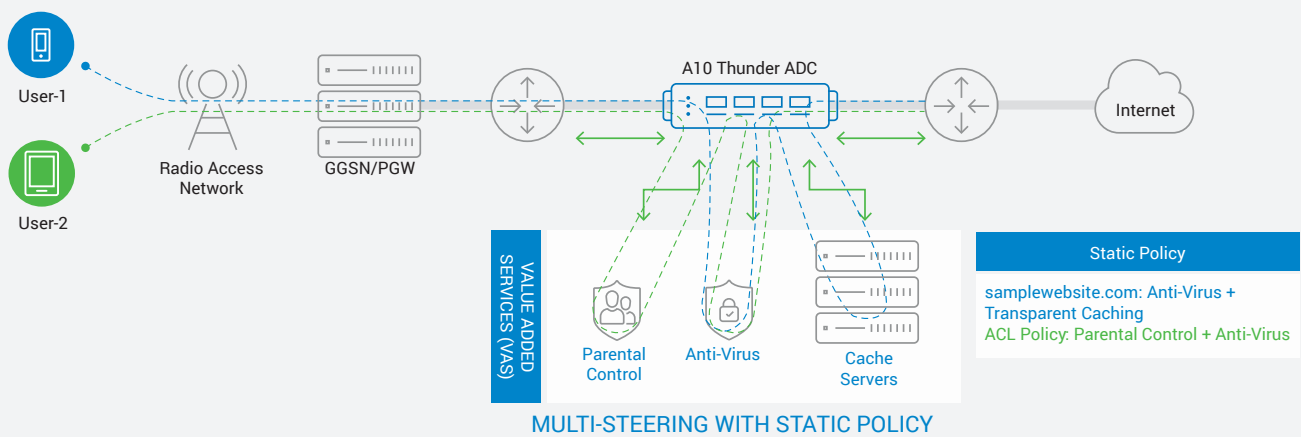
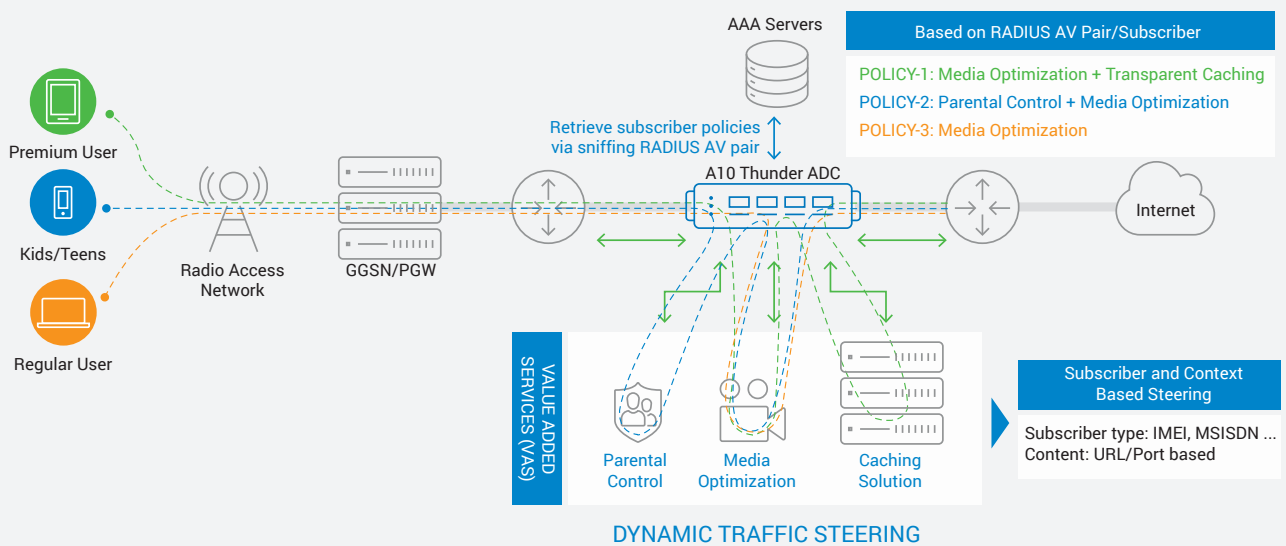


Figure 1: Multi-steering with static policies

## 2. PER-SUBSCRIBER DYNAMIC CONTROL OF SERVICES WITH DYNAMIC TRAFFIC STEERING

The decision to redirect traffic is not made solely based on L3/L7 information. Such a decision could, optionally, be made using a more flexible array of variables, including subscriber type (IMEI, MSISDN and more) or based on the context (video, URL, TCP/UDP port and more).



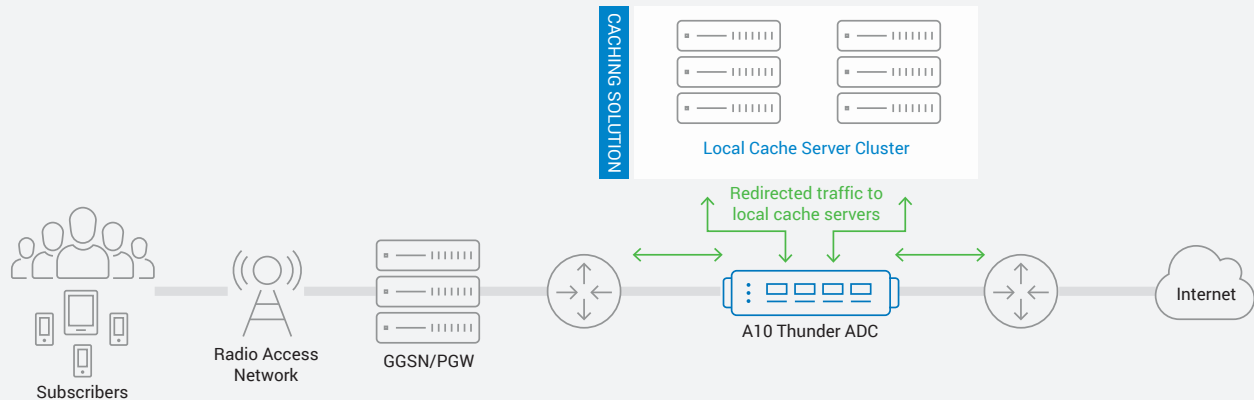
**Figure 2:** Per-subscriber dynamic control of services through dynamic traffic steering

Thunder ADC snoops on the RADIUS request and response messages to retrieve policies bound to the subscriber IP from the AAA servers. The steering decision is made based on the retrieved subscriber policies. For example, in the above scenario, the Kids/Teens subscriber policy is retrieved based on subscriber information and traffic is steered to VAS such as parental control and media optimization services, while the regular user traffic is just steered to the media optimization service.

## USE CASES

Some key use cases that service providers can leverage with traffic steering are listed as follows:

### TRANSPARENT CONTENT CACHING



**Figure 3:** Transparent Caching Solution (TCS)

TRANSPARENT REDIRECTION	<ul style="list-style-type: none"> <li>• SRC and DST addresses are retained</li> <li>• Load balancing metrics are applied</li> </ul>
SELECTIVE REDIRECTION	<ul style="list-style-type: none"> <li>• Based on TCP / UDP Port</li> <li>• Based on source or destination IP</li> <li>• Based on URL</li> <li>• Based on any other header in the request</li> </ul>

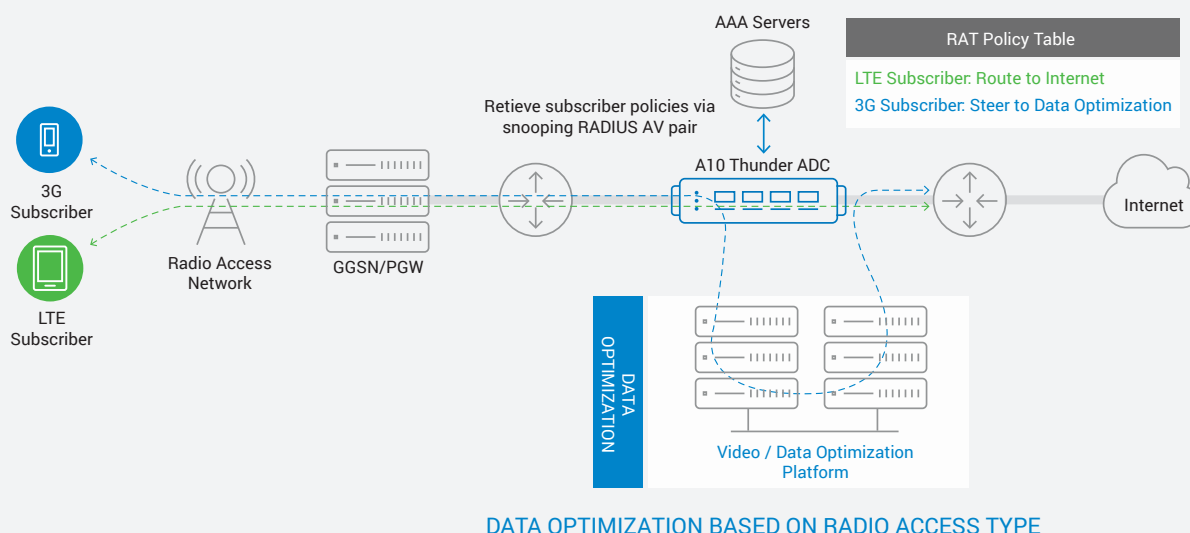
**Figure 4:** Transparent caching solution (TCS)

A10 Thunder ADCs can redirect traffic based on several variables in the traffic flow. The transparent content caching solution redirects traffic requests to the local cache servers, enabling the content to be served locally without having to traverse the internet. This redirection can be applied to all client traffic transparently or requests can be selectively redirected based on the TCP/UDP port, source/destination IP, URL or other headers in the request.

### MEDIA OPTIMIZATION BASED ON RADIO ACCESS TYPE (RAT) INFORMATION

Mobile service providers can offer differentiated services to their subscribers by steering subscriber's traffic to the data/video optimization platforms based on Radio-Access-Type (RAT) information.

In the scenario below, a mobile service provider steers subscriber's traffic to data/video optimization platforms, based on radio access type, such as 3G or LTE. Thunder ADC is placed inline with the incoming traffic and RADIUS messages are replicated to the ADC device. Thunder ADC correlates the subscriber IP address to the Radio Access Type information using aFlex scripting. The incoming traffic is then subjected to the policy based steering, and depending on the policy, the traffic is either steered to the Data Optimization services or routed to the Internet. The media optimization platforms may include Vantrix Media Optimization solution, Ericsson Multi Service Proxy, NEC, Flash Networks and more.



**Figure 5:** Media optimization based on Radio Access Type information

## SOLUTION COMPONENTS

- Thunder ADC (application delivery controller)
- aGalaxy® centralized management system
- aXAPI® REST-based API

## SUMMARY

Mobile network operators can enhance their business models with new revenue streams by leveraging techniques such as Transparent Content Caching, Media optimization based on Radio Access Type (RAT), and much more. Offer personalized services to enhance subscriber experience and maintain efficient network utilization to drive profitability.

## NEXT STEPS

For more information, please contact your A10 representative and visit: [www.a10networks.com/adc](http://www.a10networks.com/adc)

## ABOUT A10 NETWORKS

A10 Networks (NYSE: ATEN) is a Secure Application Services™ company, providing a range of high-performance application networking solutions that help organizations ensure that their data center applications and networks remain highly available, accelerated and secure. Founded in 2004, A10 Networks is based in San Jose, Calif., and serves customers globally with offices worldwide.

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